

TECHNICAL MEMORANDUM

Date: Revised October 9, 2006

To: Jim Stefanoff, PE

From: John A. Riley, LHG

Subject: Reed Tunnel Access

Per your request I have reviewed my field notes concerning access to 5 Level of the Bunker Hill Mine during the flow monitoring and water quality analysis project in 1998 and 1999. This memorandum summarizes my recollections and presents dates and activities concerning access to the Reed and Russell Tunnels. I have attached copies of selected field note with this memo.

My recollection is that both the Reed and Russell were blocked at the beginning of the project in November, 1998. If either the Reed or Russell were passable, access to all relevant area of 5 Level would be possible by simply walking into either tunnel. A manway in the West Reed Drift near the underground greenhouse connects the "Reed" workings to the "Russell" workings via the Asher drift.

My field notes contain more detail concerning the Reed than the Russell, because our monitoring efforts were concentrated in the Reed workings. Nevertheless, the Russell Tunnel must have been blocked during 1998 and 1999. If the Russell had been passable, that would have been a far preferable access route than climbing down the Cherry Raise. The man way between the Russell and Reed workings is approximately 20 feet of elevation change. Accessing 5 Level from the collar of the Cherry Raise requires several hundred feet of elevation change.

My field notes indicate that we accessed 5 Level most of the time between November, 1998 and March 1999 by riding the Cherry Raise skip, with someone from Bunker Hill operating the hoist. However it was difficult to maintain a regular (monthly or twice-monthly) monitoring schedule because mine operations sometimes prevented someone from Bunker Hill being available to operate the hoist. For example, we monitored 5 Level on November, 16, 1998 via the Cherry Raise skip. The next time that we monitored 5 Level was almost two month later – on January 14, 1999. Our access to 5 Level that day was via the service raise from 2 Level in the Sullivan workings to 5 Level in the New East Reed drift. This access route is sub-optimal because we enter 5 Level upstream of one of the monitoring stations.

We had monthly access to 5 Level in early February and March, 1998 via the Cherry Raise skip. However, Spring runoff was beginning and we needed access to 5 Level more frequently, and without the uncertainty of mine operations precluding access.

We examined the existing small collapse in the timbered section of the Reed Tunnel that was preventing access to 5 Level. Some water was flowing under the muck pile and some was ponded behind it. We presented the idea of removing some of the pile to Bob Hopper. This would provide access to 6 Level without requiring assistance from Bunker Hill personnel. After some discussion, he indicated that he had no objection, except that we must insure the safety of the workers using the access.

We removed a portion of the collapse on March 30, 1999. We let the water drain from behind the pile. We now had intermittent access to 5 Level without being an imposition to mine operations. We conducted monitoring and sampling runs approximately weekly or twice monthly during spring runoff of 1999. From mid April to mid June we accessed 5 Level via the Reed Tunnel nine times.

We found on July 1, 1999 that the Reed Tunnel had collapsed closed again. The last time that we entered 5 Level via the Reed was on June 16, 1999. This collapse prevented access to 5 Level. My field notes state "will have to discuss with Bob Hopper alternate arrangements." Our next monitoring runs to 5 Level occurred on July 27, 1999. We gained access to 5 Level by climbing down the Cherry Raise. All subsequent access to 5 Level was by climbing down the Cherry Raise.

The Russell Tunnel still was impassible in July, 1999. A group conducted a reconnaissance of the Hanna Stope off the New East Reed drift on 5 Level. The purpose of the reconnaissance was to evaluate the suitability of the Hanna Stope for storage of water treatment plant sludge. The only access to the New East Reed was via the service raise from Sullivan 2.

I can elaborate on this summary if you desire. Please contact me with questions or comments, (b) (6).